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March 30, 2018

Valentina Tereshkova and Sally Ride - Women Space Pioneers

"A bird cannot fly with one wing only. Human spaceflight cannot develop any further without the active participation of women." - **Valentina Tereshkova**

Introduction

Soon after the dawn of the Space Age, when the Soviet Union and the United States began plans for launching people into space, the question of just exactly who those people should be arose. It was assumed that the stresses of spaceflight would require individuals already accustomed to that kind of work – familiar with advanced technology, high accelerations, quick reaction time, cool headed under pressure. Both countries decided that the best qualified people for space flight would be military pilots. In the late 1950s and early 1960s, military pilots were exclusively male, so the first groups selected for spaceflight, 20 in the Soviet Union and 7 in the United States, were comprised of the "cream of the crop" among their military pilots. But many asked: could women also survive the stresses of spaceflight?

"I am Chaika!"

After the successful flight of Yuri Gagarin, the first human in space in April 1961, Soviet Chief Designer Sergey Korolyov had the idea of flying a woman in space. To find a suitable candidate, he looked outside the field of military pilots. Although piloting was not a requirement for the female candidates (the Vostok spaceship was more or less automated), parachuting was, especially because after reentry Vostok cosmonauts ejected from the capsule and parachuted to the ground separately. About 400 female candidates initially were screened and 40 were

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called to Moscow to undergo interviews, medical tests, and other tests in January 1962. Valentina Tereshkova was one of five women selected on Feb. 16, 1962. The other four, whose names were kept secret until 1987, were Tatyana Kuznetsova, Valentina Ponomaryova, Irina Solovyova, and Zhanna Yorkina.

Tereshkova was born in Maslennikovo, a village in the Yaroslavl region of Russia, on March 6, 1937. She had relatively little formal education, finishing school by correspondence. From a young age, she was interested in parachuting and joined a local aeroclub, making her first jump in 1959 at age 22. She was working in a textile factory when her parachuting skills brought her to the attention of Soviet space officials who were recruiting women to be cosmonauts. Although some of the other female candidates were more technically skilled, Tereshkova appeared to be more “politically” fit: her father died during World War II and she best fit the image of a Soviet proletariat.



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Left: Rare group photo of the five women cosmonauts selected in 1962: from left, Ponomaryova, Kuznetsova, Solovyova, Tereshkova and Yorkina (left); right, at the State Commission meeting just before the Vostok 6 flight, the official crew designations are made, from left, Ponomaryova as second backup, Solovyova as first backup, and Tereshkova as prime.

Credits: RKK Energiya

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In May 1962, a Soviet space delegation visited the United States and left with the mistaken impression that America was selecting female astronauts and that one of them would be flying very soon. Not to be upstaged, the Soviets put a plan in place to fly not one but two women on separate Vostok capsules as early as late 1962, with Ponomaryova and Tereshkova as the leading candidates. As it happened, delays ensued and the plan was changed to fly only one woman with a male cosmonaut in the other capsule. Soviet Prime Minister Nikita Khrushchev himself made the final selection, choosing Tereshkova, with Solovyova as first backup and Ponomaryova as second backup. On June 14, 1963, Vostok 5 launched with Valeriy Bykovskiy on board. Two days later, Tereshkova launched aboard Vostok 6 and made history by becoming the first woman in space, using

the call sign Chaika (чайка), or Seagull. During Tereshkova's first orbit, the two spacecraft came within 3 miles of each other and the two cosmonauts talked to each other by radio, before drifting apart and completing their separate missions. She circled the Earth 48 times over three days and made a successful parachute landing on June 19. Tereshkova was feted as a hero in the Soviet Union and made many goodwill tours around the world to celebrate her accomplishment as yet another Soviet space "first."



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Left: Tereshkova just before boarding her Vostok 6 capsule; center: TV image of her during the flight; right: shortly after her landing (right).

Credits: RKK Energiya

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Tereshkova never flew in space again. An all-female flight by Ponomaryova and Solovyova with the latter performing a spacewalk was considered briefly, but after Korolyov's death in 1966 that plan was shelved; the female cosmonaut group was formally disbanded in October 1969. It would be 19 years after Tereshkova's flight before the Soviets launched another woman into space. Tereshkova married fellow cosmonaut and Vostok 3 veteran Andriyan Nikolayev in November 1963 amid much public fanfare. Their daughter, Yelena, was born the following June and has the distinction of being the first person to have two space-traveling parents. Yelena Nikolayev graduated with distinction from the prestigious Zhukovskiy Air Force Academy, and earned a doctorate in engineering in 1977. She was active in Soviet and Russian political and other groups, and was elected to the Russian Duma in 2011. Tereshkova lives in a cottage topped with a seagull-shaped weather vane at the cosmonaut training center outside Moscow and continues to be active in cosmonaut circles. She still holds out hope to fly to Mars one day, even if it would be a one-way trip.

Sally Ride

With the advent of the Space Shuttle, NASA opened astronaut selection to scientists and engineers in addition to pilot. Women became eligible for selection as Mission Specialists. The announcement released on July 8, 1976, specifically stated that consideration would be given to qualified women and minorities.

Sally Ride was born in Los Angeles on May 26, 1951. Growing up, she was interested in science and was a nationally ranked tennis player. She earned bachelor's, master's and doctoral degrees from Stanford University. While finishing her doctorate in physics, she saw the advertisement about the new NASA astronaut selection and put in her application, along with more than 8,000 others. She passed all the required screening and physical tests and was selected Jan. 16, 1978, as part of the 35-member NASA Astronaut Group 8, known by the acronym TFNG (officially the Thirty-Five New Guys, unofficially something not printable here), which included six women, including Ride.



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Left: The six women of NASA Astronaut Class of 1978, from left, Shannon Lucid, Rhea Seddon, Kathryn Sullivan, Judith Resnik, Anna Fisher and Sally Ride); center: Ride aboard Challenger during STS 7) right: from left fellow TFNG astronaut Kathy Sullivan with Ride on a later Shuttle mission

Credits: NASA

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After completing astronaut training, the Astronaut Class of 1978 became eligible for ground and flight assignments. Ride served as Capsule Communicator (CAPCOM) for STS-2 and STS-3 (both with orbiter Columbia) in late 1981 and early 1982, and became an expert in the use of the Shuttle's robotic arm. On April 30, 1982, NASA announced that Ride would be part of the STS-7 crew, a satellite deployment and retrieval mission on board the Space Shuttle Challenger. The flight took off from the Kennedy Space Center in Florida on June 18, 1983. During the six-day mission, the crew launched two communications satellites and Ride used the Shuttle's robotic arm to deploy and retrieve a science satellite.

Five months after returning from STS-7, Ride was assigned to her second flight, STS-41G, again aboard the orbiter Challenger. Among her crewmates was Kathryn Sullivan, another woman from the Class of 1978, marking the first time that two women were in space at the same time. During the eight-day mission in October 1984, the crew deployed an Earth-observation satellite and Sullivan conducted the first spacewalk by an American woman.

In June 1985, Ride was assigned to her third flight, STS-61M, which among other things would have deployed a communications satellite in July 1986. But the Challenger accident in January 1986 put all flights and crew assignments on hold. She was asked to serve on the Presidential Commission on the Space Shuttle Challenger Accident, chaired by William P. Rogers. In 2003, NASA once again looked to her expertise and she served on the Columbia Accident Investigation Board, becoming the only person to serve on both Shuttle accident investigation teams.

Ride retired from NASA in 1987 and worked at Stanford University for two years before moving to the University of California at San Diego, where she led public outreach efforts for NASA. She was a strong science advocate, encouraging elementary and middle school-age girls to consider careers in science, technology, engineering and mathematics (STEM). Ride died of pancreatic cancer on July 23, 2012, at the age of 61, and is survived by her life partner Tam O'Shaughnessy. Together they authored several children's science books.

Women in Space Today

Women @ (<https://women.nasa.gov/>) NASA (<https://women.nasa.gov/>) have made great strides in space since the pioneering flights of Valentina Tereshkova and Sally Ride. As of this writing, 60 women from nine countries have made 138 space flights, several of them making five trips into space. Throughout the 30-year Space Shuttle Program, dozens of women flew as mission specialists and several served as pilots and commanders, deploying and retrieving satellites, performing spacewalks and conducting scientific research. Similarly, women have served as flight engineers and commanders aboard the international space station (ISS). In 2007, two female commanders met in orbit during the STS-120 (Discovery) mission: Shuttle commander Pam Melroy and space station commander Peggy Whitson. During the STS-131 (Discovery) mission to the ISS in 2010, four women were in space at the same time -- the most ever. And by the time China flew Liu Yang, the country's first female astronaut (taikonaut) in 2012, she received much less special attention.



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Left: STS-120 Commander Pam Melroy, left, shakes hands with Expedition 16 Commander Peggy Whitson) in 2007; center: four women in space at one time (clockwise from top left) Expedition 23 Flight Engineer Tracy Caldwell Dyson, and STS-131 Mission Specialists Naoko Yamazaki, Dorothy Metcalf-Lindenburger and Stephanie Wilson, and right: China's first female astronaut Liu Yang aboard the Tiangong 1 space station

Credits: NASA, CNSA

Women have also made great strides on the ground side of the space program. In recent NASA astronaut selections, up to half have been women. On the management side of NASA, women are flight directors, NASA center directors, and deputy administrators, the number two position at the agency.

The two tables below provide summary information about women's accomplishments in space. First women astronauts, listed by country of origin:

Name	Country	Year of Flight	Flight
Valentina Tereshkova	USSR	1963	Vostok 6
Sally Ride	USA	1983	STS 7
Helen Sharman	United Kingdom	1991	Soyuz TM12 to Mir
Roberta Bondar	Canada	1992	STS 42
Chiaki Mukai	Japan	1994	STS 65
Claudie Haigneré	France	1996	Soyuz TM24 to Mir
Yi So-Yeon	South Korea	2008	Soyuz TMA12 to ISS
Liu Yang	China	2012	Shenzhou 9 to Tiangong 1
Samantha Cristoforetti	Italy	2014	Soyuz TMA15M to ISS

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Notable women's spaceflight firsts and records:

Notable first/record by a woman	Who	When/What	Missions
First flight	Valentina Tereshkova	Jun 16-19, 1963	Vostok 6
First spacewalk	Svetlana Savitskaya	July 25, 1984	Salyut 7
First long-duration flight	Yelena Kondakova	October 4, 1994 – March 22, 1995	Mir Expedition 17
First shuttle pilot	Eileen Collins	February 3-11, 1995	STS 63
First shuttle commander	Eileen Collins	July 23-28, 1999	STS 93
First ISS crewmember	Susan Helms	March 8 – August 22, 2001	ISS Expedition 2
First ISS commander	Peggy Whitson	October 10, 2007 – April 19, 2008	ISS Expedition 16
Most EVA's and EVA time	Peggy Whitson	10 EVA's totaling 60 hrs 21 min	STS 111, ISS Expeditions 16, 50 and 51
Most in space at one time	Tracy Caldwell Dyson, Dorothy Metcalf-Lindenburger, Stephanie Wilson, Naoko Yamazaki	April 5-20, 2010	ISS Expedition 23 and STS 131
Longest single flight	Peggy Whitson	November 18, 2016 – September 3, 2017 (289 days 5 hours)	ISS Expeditions 50-52
Most cumulative space flight time	Peggy Whitson	665 days 22 hours	ISS Expeditions 5, 16 and 50-52

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Summary

Valentina Tereshkova and Sally Ride made their mark on history. Despite the camaraderie between astronauts and cosmonauts even during the height of the Cold War and the thaw afterwards, there's no indication that the two ever met. In their own unique ways, the two were trailblazers for women who followed their footsteps in the conquest of space.

"If we want scientists and engineers in the future, we should be cultivating the girls as much as the boys." –

Sally Ride

By John Uri

Manager, History Office

NASA Johnson Space Center

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